

ABSTRACT

A piece of material that includes low-Z elements is classified based on photonic emissions detected from the piece of material. Both XRF spectroscopy and OES techniques, for example, Laser-Induced Breakdown Spectroscopy (LIBS) and spark
5 discharge spectroscopy, may be used to classify the piece of material. A stream of pieces of material are moved along a conveying system into a stimulation and detection area. Each piece of material, in turn, is stimulated with a first and second stimulus, of a same or different type, causing the piece of material to emit emissions, for example, photons, which may include at least one of x-ray photons (i.e., x-rays) and optical emissions.
10 These emissions then are detected by one or more detectors of a same or different type. The piece of materials is then classified, for example, using a combination of hardware, software and/or firmware, based on the detected emissions, and then sorted.